

PROCEEDINGS OF THE
ROYAL ENTOMOLOGICAL SOCIETY
OF LONDON

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ORDINARY MEETING

WEDNESDAY, 6th APRIL, 1960, at 5.30 p.m. (Tea 5 p.m.)

AGENDA

1. Confirmation of the Proceedings of the Ordinary Meeting held on 2nd March, 1960.
2. Recommendations of candidates for Fellowship. First reading.
3. Recommendations of candidates for Fellowship. Second reading.
4. Announcement of election of new Fellows.
5. Additions to the Library [see p. 8].
6. Admission of Fellows.
7. Exhibits.
8. Communications.

1. Dr. J. E. Harker

The rôle of the internal clock

[ABSTRACT]

Insects, like all other animals, show 24-hour cycles in locomotor or other activities. The cycles persist for varying lengths of time in constant conditions, and can be initiated by a single short flash of light after insects have been kept for many generations in continuous darkness.

The presence of an internal clock, or clocks, enables an insect to take advantage of a coming environmental change: *Drosophila*, for example, emerges from the pupal stage before dawn, in time to take advantage of the favourable dawn conditions. The internal clock may also aid insects in navigation.

The location and mechanism of the clock is not known, but in cockroaches there has been found an endocrine clock which can be isolated, and which will function when implanted into other individuals. At least one other clock interacts with the endocrine one, and by this interaction an animal may regulate its activity in accordance with changing day-length, while remaining unaffected by unusual light conditions during the day or night.

2. Mr. P. F. Mattingly

Cyclical activities in mosquitoes

[ABSTRACT]

Various activities performed by the adult mosquito are cyclical with peaks of activity occurring at particular times of day or night. The cycles are to some extent synchronous with changes in the physical environment and were at first interpreted as direct responses to such changes. Explanations of this kind, however, proved inadequate to account for all the facts. It now appears that, in *Aedes aegypti*, there is an endogenous oviposition rhythm dependent for its expression on the receipt of a light cue. Exposure to light need only be short but it must be of circumscribed duration. In constant light or darkness the rhythm breaks down. The light cue is presumably provided in nature by the normal alternation of light and dark. Another, perhaps comparable, rhythm affecting one aspect of biting activity has recently been demonstrated. If, as seems likely, endogenous rhythms play a larger part in the life of the mosquito than has previously been thought, our ideas about mosquito behaviour will need revision. This will particularly affect the planning of experimental behaviour studies. Practical considerations regarding the long-term effect of residual insecticides may also be involved.

NOTICES

The next meeting will be held on *Wednesday, 4th May, 1960* :

(1) **Dr. C. G. Butler.**—Further work on queen substance.

(2) **Dr. T. R. E. Southwood** and **Dr. R. E. Blackith.**—Variation in the mirid, *Plagiognathus albipennis* (Fallén).

PROCEEDINGS OF THE ORDINARY MEETING HELD ON 2ND MARCH, 1960

Dr. B. P. UVAROV, C.M.G., F.R.S., President, in the Chair.

Present, 82 Fellows and 10 Visitors.

The minutes of the Ordinary Meeting held on 20th January, 1960, were confirmed and signed by the President.

The President announced that he had nominated Professor D. S. Bertram, Dr. J. S. Kennedy and Mr. E. O. Pearson as his Vice-Presidents for the coming year.

The names of the following candidates for election were read for the first time : Mr. Elwy Abdel Rahman Atalla ; Dr. Mohammed Sultan Khan Ghauri, Ph.D., D.I.C. ; Mr. James Andrew Grant ; Mr. Peter Michael Hammond ; Mr. Mumtaz Ahmad Khan, M.Sc. ; Mr. Muhammad Rafiq Khan ; Mr. William Frederick Nolde ; Dr. Philip Osborne ; and Mr. John Philip Spradbery.

For the second time (taken as read) : Group Captain Lawrence Washington Burgess, R.A.F. (Retd.), B.A. ; Mr. David John Galley ; Mr. Peter David Harris ; Mr. Anthony John Oliver ; Mr. Gordon Pritchard ; Mr. Stanley Arthur Richardson ; Mr. Louis John Saliba, B.Sc., B. Pharm. ; and Mr. Ronald John Spittle.

The Secretary read the names of the following newly elected Fellows of the Society : Mr. John Stuart Edwards, School of Agriculture, Downing Street, Cambridge ; Dr. Alastair Fraser, B.Sc., Ph.D., Department of Zoology, The University, Glasgow, W.2 ; Mr. Roger F. J. Markey, 12 Nelson Road, Brixham, Devon ; Mr. Alan Tunnard Marshall, B.Sc., 44 Luxor Street, Harehills, Leeds, 8 ; Mr. John Michael Nelson, 4 Milton Terrace, Grange over Sands, Lancs. ; Mr. Hans Raj Pajni, M.Sc., Department of Zoology, Panjab University, Hoshiarpur, Punjab, India ; Mr. Farooq Ahmad Siddiqui, Department of Entomology, University of Kansas, Lawrence, Kansas,

U.S.A.; Mr. John Strangways-Dixon, Central Farm, El Cayo District, British Honduras; Dr. Mavelikara Godavarma Raja Varma, B.Sc., Ph.D., London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, London, W.C.1; and Professor Mahendra Kumar Varma, M.Sc., Bungalow No. 59, Bhopalpur, Udaipur, Rajasthan, India.

Thanks were voted to donors of gifts to the Library since the last meeting.

Dr. R. E. Blackith, Dr. J. S. Edwards, Mr. A. C. Eyles, Mr. P. J. M. Greenslade, Mr. A. T. Marshall, Dr. J. H. Mundie, Mrs. N. Selvarajah, and Miss H. M. Walker signed the Obligation Book and were admitted Fellows of the Society.

Dr. H. E. Hinton made a communication on the effects of dehydration on the larvae of *Polypedium vanderplanki* Hinton. He said that larvae of this species had successfully metamorphosed after dehydration and being placed in liquid air (at -190°C .) for 77 hours and in liquid helium (at -270°C .) for 5 minutes. Larvae also grew normally after being thoroughly dried and exposed to temperatures of $102-4^{\circ}\text{C}$. for one minute. This species will thus survive over a range of 372°C . Larvae exposed to temperatures of over 100°C . for as much as 5 minutes do not live for long, but they will recover for a short time after exposure to 106°C . for 3 hours or to 200°C . for 5 minutes. Dried larvae stored for ten years at room temperatures only partially recovered when placed in water: in some specimens the heart pulsated for several hours. Larvae dehydrated over calcium chloride and kept in absolute alcohol made a temporary recovery when placed in water; when stored for 24 hours in absolute alcohol they recovered sufficiently to crawl about for a day after the treatment.

Dr. Hinton said, in reply to an enquiry by Dr. K. Mellanby, that a normal larva before dehydration died at 43°C .

Dr. B. J. Selman stated that he had observed that the gills of *Sialis lutaria* larvae, dehydrated for 17 months and during that time heated at 90°C . for 2 hours or 100°C . for half an hour, were, after hydration, still able to produce apparently normal tanned wound plugs. The blood cells after hydration were observed with the phase contrast microscope and found to be indistinguishable structurally and in their clotting behaviour from those of normal larvae.

Dr. Hinton agreed with Mr. M. J. Way that the larvae were not really "totally dehydrated" by being kept over calcium chloride, but he added that the water content was very low.

Professor G. C. Varley exhibited specimens of the first stage larva of the ichneumon fly *Euceros unifasciatus* Voll. (Hymenoptera: Ichneumonidae), from the collection of Philip Harwood, presented to Oxford in 1956. He had reared a series of *Trichiosoma latreilli* Leach (Cimbicidae) and from them two ichneumon flies, *Ipoctoninus nigriceps* Gr. and *Euceros unifasciatus*. The *Euceros* is a hyperparasite, and a larval skin of *Ipoctoninus* was found in the cocoon from which *Euceros* had emerged. Attached to the *Ipoctoninus* skin were three dark brown planidium larvae. Such a larval form was unknown in the Ichneumonids until the paper of Finlayson reported it for *Euceros frigidus* Cress. (1960, *Canad. Ent.* 92: 34).

Dr. J. S. Kennedy gave a paper on colour vision and host finding by Aphids, an abstract of which appeared on page 1.

In the discussion which followed, Dr. Kennedy said, in reply to an enquiry by Professor Varley, that yellow flowers did in fact bother aphids considerably. Enquiries having been made as to whether the difference in response to yellow and green leaves was so marked that, given the choice, preference was always shown for yellow leaves, even those affected by virus, Dr. Kennedy commented that experimental evidence suggested that this was so.

Dr. J. H. Mundie gave a paper on the activity of insects at the surface of Lac la Ronge, Saskatchewan, an abstract of which appeared on page 2.

A short discussion followed in which Dr. D. J. Lewis remarked that Chironomidae rise to the surface on the Blue Nile and must travel considerable distances during their lives. He wondered if this was unusual, and possibly confined to certain species, and if the reason was known. Dr. Mundie replied that the habit was probably widespread and at Lac la Ronge even *Chironomus plumosus* came to the surface, but the explanation was obscure.

Dr. B. R. Laurence asked how soon after sunset activity commenced and what relation it bore to sunrise. Dr. Mundie replied that activity varied with the species and depth of water. It was greatest about an hour before sunset, but his own work had not related it to sunrise, although work elsewhere had shown the latter influence.

PAUL FREEMAN, *Honorary Secretary.*

ADDITIONS TO THE LIBRARY

Presented

- British Museum (Natural History) *Insects and their world.* By H. Oldroyd. 8vo. London, 1960. [Trustees of the British Museum.]
 Corbet, P. S. & others. *Dragonflies.* 8vo. London: Collins, 1960. [*The New Naturalist* 41.] [The Publishers.]
 Guy, Y. *Les anophèles du Maroc.* 8vo. Rabat, 1959. [*Mém. Soc. Sci. nat. Maroc. (Zool.)* n.s. 7.] [The Publishers.]

Purchased

- De Meillon, B. *The Anophelini of the Ethiopian geographical region.* 8vo. Johannesburg, 1947. [*Publ. S. Afr. Inst. med. Res.* 49.]
Die Tierwelt Deutschlands. ed. F. Dahl. 45. *Schildläuse oder Coccoidea. 1. Deckelschildläuse oder Diaspididae,* von H. Schmutterer. 8vo. Jena: Gustav Fischer, 1959.
 Fernandez, L. G. *Nombres de insectos en Griego Antiguo.* 8vo. Madrid, 1959. [*Manuales y Anejos de "Emerita"* 18.]
 Frisch, K. von. *Aus dem Leben der Bienen.* 6te Aufl. 8vo. Berlin: Springer, 1959.
 Hanstrom, B. & others. *South African animal life: Results of the Lund University expedition 1950-51.* Vol. 6. 4to. Stockholm: Almqvist & Wicksell, 1959.
 Jorgensen, L. *Tidstabel for dansk Lepidoptera.* 4to. København: Lep. Forening, 1953.
 Koch, M. *Wir bestimmen Schmetterlinge. 3. Eulen Deutschlands.* 8vo. Radebeul u. Berlin: Neumann, 1958.
 Levenbook, L., ed. *Biochemistry of insects.* 8vo. London: Pergamon Pr., 1959. [*Proc. 4th int. Congr. Biochem. Vienna, 1958.* 12.]
 Palm, T. *Die Holz-und Rinden Käfer der süd-und mittelschwedischen Laubbäume.* 8vo. Lund, 1959. [*Opusc. ent. Suppl.* 16.]
 Ségu, E. *Introduction à l'étude morphologique de l'aile des insectes.* *Mém. Mus. nat. Hist. nat. Paris* (A) 21: 1-248, 1959.

In addition, separates have been presented by Mr. R. J. Wood; Dr. E. McC. Callan; Department of Zoology, Glasgow University; Professor G. E. Ball; M. K. J. Joseph; Dr. C. A. Clarke and Dr. P. M. Sheppard; United States Department of Agriculture; Mr. W. N. Beesley; Mr. C. Malogolowkin; Dr. D. J. Lewis; Mr. W. A. Page; Bee Department, Rothamsted Experimental Station and the Smithsonian Institution.